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STATE OF WASHINGTON  
DEPARTMENT OF ECOLOGY

P.O. Box 47600 • Olympia, Washington 98504-7600  
(360) 407-6000 • TDD Only (Hearing Impaired) (360) 407-6006

June 10, 2003

Mr. Michael S. Collins  
U.S. Department of Energy  
Richland Operations Office  
825 Jadwin Avenue  
P.O. Box 550 – A6-38  
Richland, WA 99352-0550

RECEIVED  
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EDMC

Dear Mr. Collins:

Re: Revised Draft Hanford Site Solid (Radioactive and Hazardous)  
Waste Program Environmental Impact Statement, Richland,  
Washington DOE/EIS-0286D2, March 2003

The Washington State Department of Ecology (Ecology) has received and reviewed the Revised Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement (Revised HSW-EIS).

We appreciate the work of the United States Department of Energy (USDOE) to develop a broader range of waste management alternatives, provide updated information and analysis, and address the many comments and suggestions from reviewers. We especially appreciate that the Revised HSW-EIS document provides more discussion of alternatives in the context of the important work needed to meet Hanford Site cleanup commitments.

We believe that the Preferred Alternative and its variations indicate that USDOE has been responsive to many of our concerns, public comment, and the productive work of the Cleanup Constraints and Challenges (C3T) process. Nonetheless, in several respects the draft continues to fall short of National Environmental Policy Act (NEPA) requirements.

Specifically, the draft does not adequately address either in content or clarity all the information we will need in order to support the full range of decisions about waste treatment, storage, and disposal facilities for Hanford cleanup. Our concerns are detailed in the attached summary of over-arching issues and concerns, and in a table of specific comments related to the text of the document and its appendices.



Among our concerns we would hope that the Final HSW-EIS will address the following:

- Waste volume forecasts do not include significant inventories of waste and contamination that may, under reasonably expected actions, require storage, treatment, and/or disposal in Hanford's waste management facilities. Cumulative impact analysis is based on incomplete inventories of waste and contamination and an incomplete understanding of contaminant movement in the vadose zone and groundwater.
- Groundwater analyses suggest that if full inventories of contaminants were included, and impacts were projected at facility boundaries as required by regulation, drinking water standards would be exceeded, even if only the "Hanford-only" waste volumes were assumed. These incomplete analyses suggest likely exceedences, given margins of uncertainty that must be associated with the calculations. Yet, the Revised HSW-EIS does not discuss measures that could mitigate these potential impacts, such as increased groundwater and vadose zone monitoring, or more complete waste treatment.
- It appears to us that USDOE is asserting that the groundwater under Hanford is irretrievably and irreversibly committed due to long-lived mobile radionuclides in existing disposal areas. If this is DOE's assertion, it is not supported by data, and more importantly, such a claim is not a basis to avoid mitigation.
- The discussion of cumulative impacts does not provide sufficient analyses of all wastes and total risks. Absent such analysis, Ecology may not have sufficient information to make regulatory determinations about safe and compliant treatment, storage, and disposal of all Hanford waste.
- The transportation analysis relies on outdated census data and fails to adequately assess the range of risks from terrorist activities.

Let us be clear that in our regulatory decision making, we need to obtain complete information. If these concerns are not addressed in the Final EIS, Ecology will have to seek additional analysis, thereby complicating future decision making.

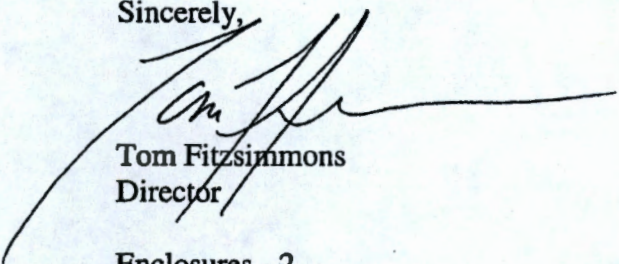
In summary, we believe the Revised Draft HSW-EIS provides an improved level of information. Additional information and clarity is needed if the Final HSW-EIS is to comply with NEPA, fully define mitigation measures, and effectively inform the handling of waste that is currently at Hanford or expected to be generated in the cleanup of Hanford. Additional information is needed to address the cumulative impacts and appropriate treatment capabilities needed to process non-Hanford waste.



• June 10, 2003  
Mr. Michael C. Collins  
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Thank you for the opportunity to comment on this important document.

Sincerely,



Tom Fitzsimmons  
Director

Enclosures - 2

cc: Keith Klein, USDOE/RL  
Mike Gearheard, USEPA  
The Honorable Robert Wahpat, Chairman, Yakima Indian Nation  
The Honorable Gary Burke, Chair, Board of Trustees, Confederated  
Tribes of the Umatilla Indian Reservation  
The Honorable Samuel N. Penney, Chairman, Nez Perce Tribal  
Committee  
Stuart Harris, Confederated Tribes of the Umatilla Reservation  
Russell Jim, Yakima Indian Nation  
Patrick Sobotta, Nez Perce Tribe  
Ken Niles, Oregon Office of Energy  
Todd Martin, Hanford Advisory Board



***Revised Draft Hanford Solid Waste (Radioactive and Hazardous)  
Waste Program Environmental Impact Statement (DOE/EIS-  
0286D2)***

***June 11, 2003***

***WASHINGTON STATE DEPARTMENT OF ECOLOGY  
GENERAL SUMMARY OF CONCERNS***

**Introduction**

In its letter of August 21, 2002, the Washington State Department of Ecology (Ecology) provided detailed comments on the first Draft HSW-EIS, pointing out numerous deficiencies that made that document inadequate to support public discussion of major issues. When the United States Department of Energy (USDOE) decided to develop a Revised Draft HSW-EIS, Ecology set forth expectations that this document must clearly address the following major concerns:

- Set a context for disposal of Low Level Waste (LLW) and Mixed Low Level Waste (MLLW) at Hanford, including relation to cleanup of the nuclear complex.
- Evaluate alternatives that arose from the Tri-Parties C3T Initiative, set forth in the Hanford Performance Management Plan, especially those that would result in LLW disposal in RCRA-compliant facilities.
- Provide sufficient analysis to support State Environmental Policy Act (SEPA) for permitting actions resulting from selection of an alternative and/or use of new technology under the Revised Draft HSW-EIS (e.g., Low Level Burial Ground (LLBG), Central Waste Complex (CWC), Waste Receiving and Processing (WRAP) Facility, T Plant)
- Provide credible analysis of cumulative impacts from disposal of Hanford-only and Hanford-only plus off-site waste, including an ecological risk assessment of the impacts of waste disposal.
- Identify mitigation measures to further protect and restore the environment.
- Provide meaningful assessment of long-term stewardship requirements for waste management facilities.
- Provide an updated transportation analysis, including associated risks and impacts.

These expectations made clear the essential information needed for the State of Washington to analyze impacts fully. Below is a summary, our findings and general comments.



## **Summary of the Revised Draft Hanford Site Solid (Radioactive and Hazardous) Waste Program Environmental Impact Statement**

The Revised Draft HSW-EIS (RHSW-EIS) contains significant changes in the waste forms and volumes, and new disposal alternatives. Immobilized low activity waste (ILAW) and melter from the Hanford Waste Treatment Plant (WTP) were added to the waste forms evaluated. Each alternative may now consider the impacts of up to three separate volumes: Hanford Only, Lower Bound, and Upper Bound. Alternatives include No Action and five other options. As described in the RHSW-EIS, these include the following:

The No Action Alternative consists of continuing current solid waste management practices, including continued storage of radioactive wastes that cannot be processed for disposal. Previous Records of Decision and other NEPA decisions for existing facilities and operations would be implemented and ongoing activities would continue. The No Action Alternative also addresses a "Stop Action" scenario.

*Alternative A* proposes new deeper, wider disposal facilities lined with leachate collection systems. Different waste types would not be disposed together. New Low Level Waste (LLW) capacity would be located in 200 West Area and new Mixed LLW (MLLW), Immobilized Low Activity Waste (ILAW), and melter facilities in 200 East Area. A modified T Plant would provide treatment for remote handled (RH) transuranic (TRU) waste, RH MLLW, and waste in non-standard containers. Offsite facilities would treat contact-handled (CH) TRU waste.

*Alternative B* proposes use of disposal trenches of the same design as now used. Different waste types would not be disposed together. New LLW and ILAW trenches would be built in the 200 West Area and new MLLW and melter trenches in the 200 East Area. A new waste treatment facility would treat RH TRU waste, RH MLLW, CH TRU waste, and waste in nonstandard containers.

*Alternative C* proposes a single, expandable disposal facility (like the Environmental Restoration Disposal Facility or ERDF) for each waste type. Different waste types would not be disposed together. New LLW facilities would be located in the 200 West Area and new MLLW, ILAW, and melter facilities in the 200 East Area. Treatment options would be the same as those in Alternative A.

*Alternative D* proposes that LLW, MLLW, ILAW and the melter be disposed in one facility. The sub-alternatives describe three locations for the facility: 1) near the Plutonium-Uranium Extraction (PUREX) facility, 2) the 200 East low Level Burial Grounds (LLBGs), or 3) the ERDF. Treatment options are the same as Alternative A.



*Alternative E* proposes that LLW and MLLW be disposed in a single facility, while ILAW and the melters are disposed in another. Disposal locations (ERDF, 200 East LLBGs, near PUREX) vary by waste groupings.

#### **Incomplete Inventory of Wastes and Contaminants**

Ecology notes that the inventory of waste streams addressed by the RHSW EIS is not complete. Wastes generated by cleanup under Comprehensive Environmental Response, Compensation, and Liabilities (CERCLA) actions that are disposed in the Environmental Restoration Disposal Facility (ERDF) are included only in a cumulative impacts analysis. Tank farm releases and residuals left in tanks appear only in the cumulative analyses, as do wastes in engineered disposal facilities, and pre-1970 potential TRU wastes. With these omissions, the document cannot be said to have fully evaluated waste management practices at the Hanford Site.

The RHSW-EIS also does not address the plan by the Office of River Protection to remove up to 750,000 gallons of single shell tank waste, treat it, then dispose of up to 20,000 barrels of TRU waste. Ecology is concerned that planning for management of TRU waste at the Hanford Site has not addressed long-term storage of this large volume should its acceptance at the Waste Isolation Pilot Plant be delayed. In addition, Ecology cannot determine the impacts that would result from shipping the drums to WIPP for disposal.

Ecology recently received a copy of the West Valley Demonstration Project Waste Management EIS (DOE-EIS/0337D) for review. Two alternatives address shipment of waste to Hanford, the Nevada Test Site, and/or the Savannah River Site in various forms. In Alternative A, the preferred alternative, and in Alternative B, Hanford could receive LLW or MLLW for disposal. Alternative B also proposes trans-shipment of TRU and HLW to Hanford for storage in transit to WIPP or the geologic repository. Ecology's review of the RHSW-EIS did not assure us that the waste streams were included in those evaluated. Ecology requests that the West Valley Demonstration Project waste volumes coming to Hanford be added to the inventory and impacts assessed or that references be added that they are included in the inventory evaluated.

#### **Groundwater Impacts and Range of Alternatives to Protect Groundwater**

As we have commented previously, the use of lines of assessment to assess groundwater quality impacts does not meet the Resource Conservation and Recovery Act (RCRA) regulatory requirement for monitoring groundwater at the point of compliance. For purposes of facility siting and impact analysis, the point of compliance should be at the waste management unit boundary. Use of various points of compliance would facilitate comparison of greatest impacts from each waste management unit. Use of lines of analyses, rather than regulatory points of compliance, results in dilution of contaminant concentrations. This approach is neither conservative nor yields a worse case scenario, as required by SEPA when inadequate information is available.



In the way the RHSW-EIS is constructed, the groundwater impact differences for disposing ILAW in 200 East versus 200 West Areas are not clearly shown. Until this level of analysis is demonstrated, this EIS cannot be used for any siting study for picking the best disposal locations. Ecology will need this kind of information prior to making permit decisions. We expected that this information would be in this NEPA document.

In the RHSW-EIS, groundwater concentration plume maps should be included for each of the alternatives for the peak impacts.

### **Cumulative Impacts Analysis**

Ecology does not support the USDOE's contention that levels of contamination in groundwater will remain below 4 mrem for more than 12,000 years. The USDOE reported drinking water dose as committed effective dose equivalent, then compared it with the Drinking Water Standard for a 4 mrem per year committed dose equivalent limit promulgated by the USEPA for beta and gamma emitting radionuclides. The dose equivalent and effective dose equivalent differ by organ weighting factors; therefore, the comparison is invalid.

Ecology does not support the USDOE's contention that tank residuals will contribute less than 1 mrem to the drinking water dose 7,000 years onward.

The main purpose of the cumulative impact assessment is to have a broad assessment of the total collective cumulative impact on the human health and the environment. While the System Assessment Capability (SAC) seems to be the right tool for this analysis, the analysis failed to provide the desired results of total cumulative impacts from the current and future waste of these burial grounds under different alternative scenarios. The current analysis simply illustrates how the tool could provide a meaningful cumulative impact taking uranium and technetium as an example. A complete analysis with the aim of total cumulative impact assessment using the SAC tool would provide a better understanding and should be attempted in the future. We request that USDOE make the following revisions in the total cumulative impact assessment that will help make the HSW-EIS results more understandable.

- The EIS must include all of the radionuclides and chemicals that are potential contaminants of concern (COC's). The current approach is limited to uranium and technetium. Contaminants such as I-129, Pu, and Cs should be addressed. The analysis ignores the inventories and associated impacts of the huge amount of chemicals known to be disposed at the solid waste burial grounds (e.g., one report shows the disposal of about 6.2 tons of nitrate at solid waste burial grounds). The report does mention sufficient data on chemical inventories are not available (p. 1-9, Appendix L.2.2) to carry out a broad assessment made by SAC. Ecology strongly disagrees with the approach and finds the current evaluation to be grossly inadequate. A complete collective cumulative assessment must include all known and expected waste inventories at the site. Ecology believes that there is significant impact on the human health and the environment not only from the inventories of radionuclides, but



also from the chemicals. The cumulative impact of chemicals is expected to extend quite far from the facilities and the point of compliance, at least on a short term basis.

- The HSW EIS must include various plume maps based on the USDOE's predictive studies and corresponding risk/impact maps (in two dimensions) for easier understanding on a site wide basis.
- The HSW EIS must separate the results of SAC-SW EIS assessment from the other site wide assessments (these may include the solid waste sites, as well) so that one can compare and contrast its impact. At present the SAC- REV0 and the current approach of SW-EIS differs not only in terms of time frames (10,000 yrs. for SW-EIS vs. 1,000 yrs. for SAC Rev.0), but also in other input parameters such as the inventories, release mechanisms, number of contaminants (cemented vs. non cemented), etc.
- The SAC results in the HSW EIS must come up with a credible assessment to compare results with historical field data (history match) specific to solid waste origin. This will be very challenging considering the lack of data/knowledge gaps and what SAC can achieve at this time.
- The concept of "aggregated areal foot print" may not provide a conservative picture for the calculation. One must examine these inventories carefully, and see how they were released and its impact.
- SAC in the HSW-EIS ignores terrestrial ecological pathways. This pathway is important for the burial grounds and needs to be incorporated.
- The HSW-EIS SAC analysis does not address uncertainty due to the use of different models, nor does it differentiate between uncertainty due to lack of knowledge and the uncertainty due to natural variability in the parameters. The current uncertainty analysis identifies controlling sources of variability in the simulation estimates of performance measure, but not necessarily the source of overall magnitude of performance measure. The analysis should address the source of overall magnitude of uncertainty, as well as uncertainty due to lack of knowledge and natural variability in the parameters.
- The EIS does not adequately display the data related to risk. In fact, the risk analysis and discussion is not tied directly to specific alternatives. In addition to discussing the mrem groundwater dose impact of each alternative, the EIS should also include the ground water concentrations for each alternative. The risk as displayed by Incidental Latent Cancer Risk (ILCR) should be discussed for each alternative. This sort of analysis and discussion should include ILCR contour maps generated for each alternates for various times in the next 10,000 years. The reader should be able to get a sense of how much of the land area for how long will have an impact near, at or above health standards. This data should be provided in groundwater concentration plume maps and ILCR contour maps (see the TWRS EIS DOE/EIS-0189). In addition, a table should be developed that discusses the alternative and the ILCR peak levels and the number of related fatalities.
- The EIS does not adequately show the differences between the various alternatives locating disposal in 200 East versus 200 West. There are known and documented environmental differences in disposing of the ILAW in 200 West



versus 200 East. But this does not show up in the analyses that support this EIS. This would appear to indicate a problem with the modeling, or points of calculation too far way from the facilities.

### **Irreversible and Irretrievable Commitments of Resources**

Ecology does not agree that the USDOE's claim that the presence of long-lived, mobile radionuclides in the groundwater constitutes a continuing commitment of a water resource. Ecology will not allow releases from waste management units to continue or be left after the units cease operations, absent any form of monitoring or mitigation. Ecology will insist that the USDOE remove the waste that are sources of contamination in the groundwater, monitor for the releases, and implement short- and long-term mitigation measures.

### **Storage and Treatment of Hazardous Components of TRU Waste**

Treatment of hazardous components of TRU waste is not addressed. Ecology notes that the USDOE acknowledged hazardous components in TRU waste streams but does not address treatment of those components. In addition, the means by which RH and non-standard TRU packages would be processed is not developed. The USDOE asserts that non-standard TRU processing will begin in 2015 and RH processing will begin in 2013, but no attempt is made to explain how the USDOE will establish methods to accomplish such processing.

Further, storage of TRU waste in unlined trenches is unacceptable.

The RHSW EIS does not include analyses of significant adverse environmental impacts that may result from operation of facilities needed for characterization, processing, treating, and storing TRU and TRU-M.

### **Transportation Issues**

The USDOE's evaluation of transportation risks is not complete. Of real concern to Ecology is the USDOE's use of population data resulting from the 1990 census that does not reflect the growth in the two states. Ecology requests that 2000 census information be used in the Final EIS.

While analyses convey the fatalities that can result from accidental or malevolent sudden loss of containment in transport of TRU waste, they do not address the real possibility of diversion of shipments. Further, the scenarios evaluated do not address other measures that terrorist might take (e.g., dirty bombs) that would have significant adverse effects to public health and psyche, the environment, and the economy. In evaluating risk in transit, USDOE fails to consider that while most shipments are made on the Hanford Site, the total distance shipped offsite is significant.



In addition, the analyses are limited because they fail to address use of rail transport for waste shipments to WIPP, which appears to be in conflict with a commitment to support rail shipments from Hanford.

### **Inadequacies of the Regulatory Analysis**

The no action alternative is based on the premise of "operation of existing facilities without conducting additional activities necessary to meet regulatory obligations." This is not an accurate representation of the no-action alternative or the evaluations made for this alternative. The no-action alternative as explained in the US Environmental Protection Agency's "Council on Environmental Quality, Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations," Question 3, in the USDOE's own *NEPA Process Reference Manual Rev. 8* states that "the 'no-action' alternative may be thought of in terms of continuing with the present course of action until that action is changed". That description of no action does not allow the USDOE to abrogate its responsibilities to comply with the provisions of the Hanford Federal Facility Agreement and Consent, nor does it allow the USDOE relief from compliance with State and Federal Regulations. The LLBG permit application is under discussion now; to infer that those negotiations will cease is not accurate. Ecology requests that the USDOE modify the no-action alternative to acknowledge existing regulatory obligations.

The Revised HSW-EIS appears to assert that only certain low level burial grounds will be subject to dangerous waste management processes. All of the low level burial grounds appear in on the Dangerous Waste Permit application, Part A, Form 3. They are part of a treatment, storage and disposal (TSD) unit and must be managed accordingly.

### **State Environmental Policy Act EIS Requirements**

Based upon our reviews of the first draft of the HSW-EIS and this revision, we continue to be concerned about certain significant issues. For this document to be satisfactory to support the Ecology's environmental reviews required by the State Environmental Policy Act (SEPA) prior to the issue of dangerous waste permits, as implemented in WAC 197-11 and WAC 173-802, the issues identified below must be resolved.

- A provision in WAC 197-11-400(3) requires that environmental impact statements be "concise, clear, and to the point". The complexity of the RHW EIS and its supporting Appendixes preclude ease of review by the public and the agencies.
- Per WAC 197-11-440(5)(b)(i), selection of reasonable alternatives is "intended to limit the number and range of alternatives, as well as the amount of detailed analysis for each alternative." The multiplicity and complexity of alternatives for disposal based upon waste streams and locations precludes a concise explanation of the environmental impacts.
- Per the *SEPA Handbook* (Ecology Publication No. 98-114, Sec. 3.3.2.1), the no-action alternative is usually "what would be most likely to happen if the proposal



did not occur.” The no-action alternative described in the RHSW EIS Sec. 3.1.1 would include “continued operation of existing facilities without conducting additional activities necessary to meet regulatory obligations.” This is unlikely to happen because the Hanford Federal Facility Agreement and Consent Order (HFFACO), the Dangerous Waste Portion of the Hanford Site Resource Conservation and Recovery Act (RCRA) Permit, the Washington Dangerous Waste Regulations (WAC 173-303), and numerous other Federal and State regulations govern waste management operations. Ecology does not therefore regard the No-Action Alternative to be that in fact.

- The No-Action Alternative continues by saying that MLLW would be stored rather than treated because of limited commercial capacity to treat the wastes. The no-action alternative is not truly such because the USDOE states that the Central Waste Complex (CWC) must be expanded to allow larger volumes of waste to be stored. Expansion of the CWC can be expected to have potential environmental impacts if the inventory of dangerous wastes and radioactive wastes increases. Ecology will consider expansion of the CWC Facility as part of a dangerous waste permit modification and will evaluate environmental impacts of expansion under its authority in WAC 173-802.
- Any new waste treatment facility that the USDOE might wish to construct would require a dangerous waste permit and thereby a thorough environmental review. Ecology recognizes efforts conducted by the USDOE to conduct cultural and historic resource reviews and to identify Federal endangered species to date; however, more thorough reviews must be conducted to support any dangerous waste permit.
- Per WAC 197-11-440(6)(e), significant impacts on both the natural environment and the built environment listed in WAC 197-11-444 must be analyzed, if relevant. Ecology noted that the following areas lack the depth of analysis required to fully describe significant impacts:
  - Groundwater movement/quantity/quality that would be affected by presence of chemicals known to have been buried in the Low Level Burial Grounds.
  - Fragmentation or loss of habitat that could adversely affect both native vegetation and animals with the large areas designated as sites for modular combined use facilities.
  - Use of a new waste treatment plant to treat wastes
  - Potential toxic air emissions resulting from the use of pulse driers to treat disposal facility leachate when ETF closes
- Per WAC 197-11-792 Scope, to determine the scope of EIS's, agencies consider three types of actions, including (a)(ii) connected actions (which includes parts of proposals that are closely related) and three forms of impacts, including cumulative impacts (c)(iii). Ecology views the scope of the RHSW EIS to be incomplete because the waste volumes in the Hanford Only waste stream ignore waste disposed in older burial grounds, environmental restoration waste already disposed in the Environmental Restoration Disposal Facility (ERDF), commercial waste disposed of in the U.S. Ecology commercial waste facility adjacent to the Hanford 200 Area,



engineered disposal facilities (cribs, ponds, and ditches), and single shell tank releases.

### **Ecological Assessment/Impacts**

The description of the affected environment and impacts to ecological resources ignores the fragmentation of habitat that results in direct impacts to species diversity and does not address ecological relationships that may be affected by the alternatives. Habitat is judged to be unsuitable or unaffected, based in large part on effects of the 24 Command Fire of 2000, with no attempt to integrate additional impacts from proposed actions in this EIS. Analyses of the impacts of proposed actions are not complete for certain species (e.g., loggerhead shrike) and environmental impacts (e.g., adverse noise-based impacts). The discussion of new-to-science species does not give sufficient information to determine what impacts the proposed alternatives might have. Ecology does not view the evaluation of ecological impacts to plants and animals to be sufficient because of these deficiencies. An eco-system analysis should be added to the Final EIS.

The State Department of Fish and Wildlife will provide specific comments regarding these issues. Ecology will consider deficiencies to be addressed when the eco-system analysis is completed satisfactorily and comments from the State Fish and Wildlife are addressed in the Final EIS.

### **Health Impacts**

The health impacts presented in the RHSW EIS are understated because they do not include the additional burden that would appear were the facilities not included in the analysis to be added (e.g., old burial grounds, ERDF).

Ecology also does not support the USDOE's statements that due to administrative controls, individuals will be prevented from drilling wells, drinking water, and living over buried waste for an extended time.

Health impacts from disposal of chemicals is absent from the RHSW EIS. Ecology maintains that chemical inventory must be estimated and added risk to the health of workers, the public, and future residents evaluated.

### **Consideration of Closure, Long-Term Care and Costs Is Very Limited**

This document takes a very cursory approach to institutional controls and long term stewardship. Instead of mentioning the longevity of European society and buildings, the HSW-EIS should reference the vast number of documents that describe average time elapsed prior to institutional control failures.



### Other Issues

During Ecology's review of the document, we noted several issues concerning the scope. These issues are summarized below:

1. Ecology has asserted forcefully that the technetium-99 (Tc-99) should be removed from the tank waste prior to vitrification of the low activity waste. If the Tc-99 is not removed, choosing an ILAW disposal location in 200 West is not viable. Tc-99 is the ILAW contaminant of concern that has the most significant potential future groundwater impacts. Its presence in the waste creates the risk from exposure to groundwater resulting from land disposal of the ILAW.
2. As did the previous draft, the Revised HSW-EIS assumes that the USDOE's Record of Decision (ROD) (65 FR 100651 ff) to create a regional MLLW disposal operation at Hanford allows receipt of wastes from sites around the complex for disposal in the Hanford MLLW trenches. It also assumes that TRU waste will be brought to Hanford for processing and certification per a recent revision of the ROD (67 FR 56989 ff). TRU waste management, including offsite TRU waste shipments to Hanford, is currently the subject of litigation between the State of Washington and the U.S. Department of Energy.

The RHSW-EIS compares impacts of disposal of Hanford waste only versus Hanford plus lower- and upper-bound volumes of LLW and MLLW; but it assumes that the 2000 Record of Decision (ROD) (65FR10061) for the Waste Management (WM-PEIS) for disposal of LLW and MLLW will be implemented. Based on that assumption, the RHSW EIS does not consider off-site disposal alternatives for Hanford-generated MLLW and LLW.

The tone of the HSW-EIS strongly suggests that it was driven by the imperative to support the 2000 ROD (and the 2002 modification of the TRU ROD that allows Hanford to become a consolidation center for TRU waste from other USDOE sites) under the WM-PEIS. Washington remains steadfast in its position that the WM-PEIS was not adequate for selecting sites for disposal of the waste inventories. The RHSW-EIS does not perform adequate independent assessment of the impacts of disposing of additional volumes of LLW and MLLW from other USDOE sites or transporting, consolidating, and storing TRU waste from other sites.

Among the reasons Ecology asserts that USDOE has failed to provide adequate NEPA coverage in the WM PEIS and the RHSW-EIS are the following:

- Extensive additional EISs were required for disposal of other classes of waste (WIPP SEIS II, Yucca Mountain EIS).
- NTS and other sites' site wide EIS's were cited in the WM-PEIS, but no such EIS existed for Hanford.
- The WM-PEIS did not have available the analytic tools to model releases to the environment used in the HSW-EIS, notably the SAC and its inventories.



- Potential exceedences of groundwater standards in the RHSW-EIS are quite different from those acknowledged in the WM-PEIS (e.g., Tc-99 vs. uranium).
  - The TWRS-EIS addressed onsite storage of Immobilized Low Activity waste in its Record of Decision (64 FR 46661), not land disposal; therefore, it cannot be said to be adequate to evaluate long-term impacts.
  - The WM-PEIS contained insufficient information about the Hanford site to enable assessment of site specific impacts that should have been considered before Hanford was selected for disposal of off-site waste.
3. The HSW-EIS fails to acknowledge that exclusion of off-site waste and/or disposal of Hanford wastes off-site are reasonable mitigation measures, should groundwater standards be exceeded when LLW and MLLW wastes are land disposed.



**Washington Department of  
Ecology Specific Comments on  
the Revised Draft Hanford Solid  
Waste EIS**



**RHSW-EIS COMMENT****NO.****COMMENT**

General Comments (G)

1

The RHSW EIS fails to recognize to understand the characterization and monitoring needs to achieve regulatory compliance. There are gaps in characterization, assessment and other pertinent data for the assessment and associated implications.

G2

The current groundwater monitoring system does not achieve RCRA regulatory compliance.

G3

At the Hanford Site, there is a huge deficiency in the number of wells required for the detection, delineation and assessment of releases at a number of LL Waste Management Areas (LLMA's). These issues were described in Ecology's Notices of Deficiency (NOD's) transmitted for the Low Level Burial Grounds permit application.

G4

The RHSW EIS lacks adequate data on the inventory of waste through characterization. There is very little information about the inventory of dangerous wastes in the burial grounds.

G5

The lack of inventory data leads to improper assessment of risk and impact to the environment.

G6

The text of the RHSW EIS refutes or does not address the applicability of RCRA closure, post closure and corrective action requirements for the all of the burial grounds.

G7

In the Dangerous Waste Part A permit application, the entire unit is RCRA regulated. The entire LLBG disposal waste management unit is permitted under the DW portion of the Hanford RCRA Permit as RCRA TSD unit (as per LLBG dangerous waste permit application, Form 3, Rev 12). The LLBG unit must comply with interim status standards pending insertion of the facility-specific permit into the sitewide permit. The entire RCRA TSD is subject to RCRA closure, post-closure, and RCRA corrective action (where applicable) requirements of WAC 173-303.



- G8 As a land-based TSD, the entire LLBG unit is currently subject to groundwater monitoring requirements of WAC 173-303-400 (interim status). U permit issuance and closure plan approval, the LLBG's will be subject to final groundwater monitoring standards.
- G9 The EIS does not acknowledge information available about suspected releases from the burial grounds (e.g., LLWMA 4) and deficiencies associated with the existing groundwater monitoring network.
- G10 The EIS addresses risk in terms of the risk from release of radiochemicals only. No explanation or justification is provided for USDOE's omission of risk from non-radioactive chemical wastes. The risk assessment cannot therefore be considered to be complete, absent an evaluation of risk from those wastes.
- G11 The EIS does not display the data related to risk adequately; risk analysis and discussion are not tied directly to specific alternatives. In addition to discussing the mrem groundwater dose impact of each alternative, the ground water concentrations should be displayed for each alternative and the risk as displayed by incidental latent cancer risk (ILCR) should be discussed for each alternative. This sort of analysis and discussion should include ILCR contour maps generated for each alternative for various times in the next 10,000 years. The reader should be able to get a sense of how much of the land area will have an impact near, at or above health standards for how long. These data should be provided in groundwater concentration plume maps and ILCR contour maps (see the TWRS EIS). Additionally, a table should be developed that discusses the alternative and the ILCR peak levels and the number of related fatalities.
- G12 The EIS does not adequately show the differences between the various alternatives locating disposal in 200 East versus 200 West Area. There are documented differences in disposing of the ILAW in 200 West versus 200 East Area, but this does not show up in the analysis that support this EIS. This absence indicates a problem with the modeling, or the points of calculation are too far way from the facilities.



G13

In the way that this EIS is constructed, no information shows the groundwater impact differences for disposing ILAW in 200 East versus 200 West. Until this level of analysis is demonstrated, this EIS cannot be used as a basis for any siting study picking the best disposal locations. Ecology will need this kind of information prior to making permit decisions. We expect that this information would be in this NEPA document or to be provided to us to support the permit application.

G14

Ecology does not disagree with the USDOE's selection of the ILAW waste form with Tc-99 present; however, we would like to reiterate that the Tc-99 should be removed from the tank waste prior to vitrification. We have sent several letters to the Office of River Protection on this subject. If the Tc-99 is not removed from the waste, picking a ILAW disposal location in 200 West is not viable. Tc-99 is the contaminant of concern related to the ILAW as far as potential future groundwater impacts- it drives the groundwater risk.

G15

Groundwater concentration plume maps should be provided for each of the alternative for the peak impacts. ILCR contour maps showing concentrations for each alternative and the peak concentration times should also be included. ILCF should be calculated for each alternatives. Data should be displayed in the same style as the TWRS EIS.

G16

Ecology does not agree that the USDOE's claim that the presence of long-lived, mobile radionuclides in the groundwater constitutes a continuing commitment of a water resource. Ecology will not allow releases from waste management units to continue or be left after the units cease operations, absent any form of monitoring or mitigation. Ecology will insist that the USDOE remove the waste that are sources of contamination in the groundwater, monitor for the releases, and implement short- and long-term mitigation measures.



<u>RHS-EIS COMMENT NO</u>	<u>RHWS-EIS REFERENCE</u>	<u>COMMENT</u>
Regulatory Deficiencies 1	CRD	(Re: Comment # 162) On August 21, 2002, the Department of Ecology commented on the lack of integration between the EIS process and State and local planning concerning receipt of waste from other US Department of Energy (USDOE) sites (see Comment Response Document Letter L095, comments 162 through 164). Ecology intended for the US Department of Energy to acknowledge a significant disparity in State and Federal plans, as exemplified by a letter from Tom Fitzsimmons to Carolyn Huntoon, dated March 21, 2001. Mr. Fitzsimmons stated clearly that the State does not wish to accept offsite waste while the USDOE defers action on serious problems already in existence.
R1 (Cont'd)		The State filed a lawsuit on March 4, 2003, to stop shipments of transuranic waste to Hanford. A Federal Court judge has issued a preliminary injunction prohibiting additional shipments, based on Ecology's concerns. While the USDOE modified its waste volumes to include Hanford-only wastes, the preferred alternative is dismissive of the land to be used for additional waste volumes and impacts on the environment. Please address conflicting goals for acceptance of offsite waste fully.
R2	3.1.1, p. 3.5	DOE has developed the no action alternative assuming the "operation of existing facilities without conducting additional activities necessary to meet regulatory obligations." This is not an accurate representation of the no action alternative, or the evaluations made for this alternative. Ecology will not allow non-compliant operation of the facilities now, or in the future.



- R3 CRD, p. 3.80 Original comment #16 stated, in part, "The exclusion of pre-1970 TRU waste from analysis is inappropriate." The original comment was focused on the LLBG. DOE's response was basically that waste disposed of prior to 1970 will be addressed via CERCLA. This is of concern because, although LLBG is part of a much larger CERCLA site, it is also a RCRA TSD and must meet the regulatory requirements for operation and/or closure under WAC 173-303. DOE's response also says cumulative impacts from pre-1970 wastes are addressed in the revised HSW-EIS, and reference Sections 3.0 & 5.0 and App L. However, review of these sections reaffirms that waste disposed of prior to 1987 (when RCRA first applied to mixed waste at Hanford) did not receive the characterization that is required by Hanford and, as such, limited information exists and uncertainties are great.
- R4 CRD, p.3.86 Original comment #47 questioned the assumption that the LLBGs would ultimately be closed with a cap and also cited the need for closure decisions to go through the permitting process. DOE's response was that MLLW units will be closed via WAC 173-303-610. However, all of the LLBG is a TSD and, as such, must comply with WAC requirements for closure and post-closure care. Again, it looks like DOE is writing off the RCRA requirements associated with the entire LLBG – including the unlined trenches.
- R5 Vol. I, Sec. 6.0 DOE makes several remarks regarding their authority under AEA and also regards Ecology's authority for the hazardous component of mixed waste; however, there is no discussion about the regulatory authority over mixed wastes with regard to decision-making.



- R6 Vol. I, Sec. 6.19 In this section, DOE identifies the various Hanford facilities that would be involved in implementing the alternatives including the LLW trenches and the MLLW trenches. This is incorrect in that the LLW trenches and the MLLW trenches are not separate units. They are both part of the LLBG unit and are being permitted as such. Within the LLBG Part B permit, the MLLW trenches will be permitted for operation and the LLW trenches will be on a compliance path to closure. The entire TSD unit will be assessed for compliance with permitting requirements, including those for closure, post-closure, corrective action, RCRA/CERCLA integration, and groundwater monitoring. DOE makes the clear distinction that the Hanford RCRA Permit is "not applicable" to the LLW trenches. This is in error and needs to be corrected.
- R7 Vol. I, Sec. 6.19, Table 6-1. DOE includes a superscript that reads, "(a) Interim status currently, final status in process." Interim status permits at Hanford were effectively terminated when the final Hanford RCRA Permit was issued in 1994. Several TSD units have been allowed to operate under interim status standards until final status standards could be developed and added to the Hanford RCRA Permit. DOE's superscript should be deleted or revised to read, "currently operating under interim status standards; final status standards being developed." (Reference: Letter, Greg Sorlie, Ecology, to Joel Hebdon, USDOE, "Rulemaking petition to amend the Dangerous Waste Regulations, Chapter 173-303 Washington Administrative Code," dated December 19, 2002).
- R8 Vol. I, Sec, 1.7.3.2 Acquisition of treatment capacity for mixed low level waste and transuranic waste presumes that Hanford facilities (e.g., T Plant) would be modified. Expansion of these facilities will be subject to modifications of existing permits. The USDOE must comply with the provisions of WAC 173-303-830(4) to modify the permits and WAC 173-303-282 if the facilities will be expanded.



- R9                      Vol. I, Sec. 3.6, Ecology's August 21, 2002 comments (numbered 8, 102, 103, 104, 105, 106, and  
pp. 3.58-59, 177) identified the omission of addressing groundwater monitoring requirements,  
Table 3.21 including monitoring well installation and monitoring costs. Specifically, Ecology's  
comment indicated the omissions rendered the impact and cost evaluations "1) non-  
bounding and incomplete and 2) do not allow the reader to understand that the  
groundwater quality impact analysis is not supported by adequate LLBG-specific  
data."
- R10                      From the regulatory description of the LLBG unit included in Appendix D, it is clear  
that USDOE does not consider the majority of the LLBG units to be regulated under  
RCRA. The entire LLBGs (Low-Level Waste Management Units 1-5 and other  
Burial Grounds) are permitted (interim status) as a RCRA TSD unit as per the Low-  
Level Burial Grounds Dangerous Waste Permit Application, Form 3, Revision 12,  
07/01/2002. The entire RCRA TSD is subject to RCRA closure and post-closure  
requirements of WAC 173-303-610. Furthermore, as a land-based TSD, the entire  
LLBG unit is subject to RCRA groundwater monitoring requirements of WAC 173-  
303-400 (interim status) and, upon permit issuance, 645 (final status).
- R11                      Vol. I, Sec. 3.6, Ecology's August 21, 2002 comments (numbered 8, 102, 103, 104, 105, 106, and  
pp. 3.58-59, 177) identified the omission of addressing groundwater monitoring requirements,  
Table 3.21 including monitoring well installation and monitoring costs. Specifically, Ecology's  
comment indicated the omissions rendered the impact and cost evaluations "1) non-  
bounding and incomplete and 2) do not allow the reader to understand that the  
groundwater quality impact analysis is not supported by adequate LLBG-specific  
data."



R12

TPA section 5.3 states: "Unless closed in accordance with Sections 6.3.1 or 6.3.3, TSD units shall be permitted for either operation or post closure care pursuant to the authorized State Dangerous Waste Program (173-303 WAC) and HSWA. Prior to permitting or closure of TSD units, DOE shall achieve (in accordance with the work schedule contained in Appendix D) and maintain compliance with applicable interim status requirements. All TSD units that undergo closure, irrespective of permit status, shall be closed pursuant to the authorized State Dangerous Waste Program in accordance with 173-303-610." Clearly, the LLBG unit is subject to the groundwater monitoring requirements of WAC 173-303.

R13

The EIS does not appear to include groundwater monitoring for the LLBGs in the comparison of costs of alternatives (see Sec. 3.6). Washington Administrative Code (WAC) 173-303-645 requires groundwater monitoring at RCRA land-based TSDs. Even though only portions of the LLBGs will be permitted to operate under final facility standards, the majority of the LLBGs will be subject to land-based RCRA TSD closure standards which will include groundwater monitoring requirements of WAC 173-303-645.

R14

Figures D.1, D.2, D.3, D.4, D.5, D.6, D.7, and D.8 are very similar to those found in Low-Level Burial Grounds Dangerous Waste Permit Application, Form 3, Revision 12, 07/01/2002. However, the figures included in Appendix D of the EIS have been modified to remove the designation of the entire units as "treatment, storage, and/or disposal area". Therefore, the figures included in Appendix D of the EIS are not consistent with the RCRA Part A for the Low-Level Burial Grounds.

R15

Comment # 89  
and Water  
Quality  
description for  
LLBG Vol. Sec.  
4.5.3.3

(Re: Comment # 89) The response states: "Current results from the RCRA-compliant groundwater monitoring have not identified any groundwater impacts from the LLBGs." Washington State Department of Ecology has not made a determination that the groundwater monitoring at the LLBGs is compliant. Statements that indicate or imply that the LLBG groundwater monitoring program is compliant should be deleted.



R16                      The response states: "Current results from the RCRA-compliant groundwater monitoring have not identified any groundwater impacts from the LLBGs." The RCRA Part B permit application text states: "Total organic halides in downgradient well 299-W15-16 has exceeded the upgradient/downgradient comparison value since January 1999, but the source of contamination is believed to be the regional carbon tetrachloride plume, not the burial grounds." Subsequently, investigation by the USEPA Hanford Office and Ecology suggested that the LLBG is a source of CCl<sub>4</sub>.

R17                      The groundwater quality description associated with LLWMA 3 states: "EPA, Ecology, and DOE have an integrated groundwater monitoring well network for the Central Plateau. This includes new wells to be installed for the LLBGs." The statement is not correct. At present, there is no "integrated groundwater monitoring well network for the Central Plateau" which addresses the LLBG groundwater monitoring network and program deficiencies.

R18                      The response indicates the points of analyses used in the comparative assessment were "located along lines approximately 1 km (0.6 mi) down gradient from aggregate HSW disposal areas within the 200 East, 200 West, and the ERDF areas and near the Columbia River located down gradient from all disposal site areas (Figure G.1)." The response also explains why these points of analyses were selected. Specifically, the response explains: "Points of analysis approximately 1 km down gradient from the overall waste disposal facilities in each area are not meant to represent points of compliance but rather common locations to facilitate comparison of impacts from broad waste management selections and locations defined for each alternative."

R19                      According to Figure G.1, the various points of analysis apparently do not represent contaminant convergence points. The explanation is not understood. Contrary to the explanation, use of the various points of compliance would facilitate comparison of greatest impacts from each waste management unit. Use of points of analyses located along lines approximately 1 km down gradient from waste management units results in dilution of impact concentrations. This approach is not conservative.



R20

The response describes transport mechanisms of contaminants evaluated. Section G.1.3.3.1 describes the soil-debris model and states: "The inventory was assumed to be perfectly mixed throughout the source volume during the entire release period assuming perfectly mixed conditions reduced the likelihood that solubility would control the release." If a contaminant inventory (e.g., technetium-99 for which  $K_d$  is assumed 0) were spread out into a thin layer (pancake-like) across a huge area (such as the LLBGs), the concentration at the water table (once the technetium-99 is driven through the vadose zone) will be lower than if all the contaminant inventory occurred in a compact or smaller area. A scenario by which contaminant inventory distribution yielding the model's approach is not provided in the description of the model. This approach is not conservative.

R21

The short-term impacts of operations and construction activities are described in Section 5.3.1 and appear to be based on an assumption of no current environmental impacts from the LLBGs. This assumption is not supported by monitoring data or technical evaluation. Releases have been detected from LLWMA 4 as shown by environmental monitoring data.

R22

The following regulations from the HFFACO should also be included in the evaluation in Section 6.1 for applicability: Nuclear Energy and Radiation Act – Chapter 70.98 RCW, and implementing regulations.; Water Well Construction Act – Chapter 18.104 RCW, and implementing regulations; Water Pollution Control Act – Chapter 90.48 RCW, and implementing regulations; Regulations of Public Groundwaters – Chapter 90.44 RCW; Washington State Water Code – Chapter 90.03 RCW; Washington State Environmental Policy Act – Chapter 43.21C RCW, and implementing regulations.

R23

In Section 6.1, the following State laws and their implementing regulations governing air emissions should be added: Washington Clean Air Act - Ch. 70.94 RCW and Department of Ecology - Ch.43.21 RCW; WAC 173-470 through WAC 173-481 (referenced as footnotes on Table 4.6).



DOE states that "DOE facilities used for the management, storage, treatment, and disposal of radioactive waste and radioactive mixed waste are constructed and operated under the authority of the AEA." In a statement following half page later DOE states that it will "comply with applicable federal, state, and local laws and regulations." Add a clarification that any facility operated for the management of mixed waste must also be constructed and operated in compliance with RCRA/State DW requirements.



DOE states that "The CEQ regulations implementing NEPA (40 CFR 1502.25[b]) require that a draft EIS list all federal permits, licenses, and other entitlements that must be obtained to implement the alternatives." No information for permits required for modified and/or new construction as proposed in the alternatives appear in the list. Instead, DOE included a general statement that "DOE would obtain appropriate required permits for any new or modified facilities." Specific information on the types of permits for new/modified facilities should be added to Table 6.1.



<u>RHSW-EIS</u> <u>COMMENT NO.</u>	<u>RHSW-EIS</u> <u>REFERENCE</u>	<u>COMMENT</u>
Scope (S) 1	2.2.7, pp. 2.40-41	This section is inadequate. First, its three examples provide no information about the metrics to be used in making the choices relating to closure of burial grounds and facilities dealt with in this EIS. Nor do the examples indicate the metrics that might be used in making such decisions (e.g., it may or may not be impossible to get 100 per cent of the waste out of a tank, but it is technically possible to remove the tank and dispose of it somewhere else.) There is no indication of what measures would be used to assess relative risk of retrieving waste from "old burial grounds". There is no effort to connect this abstract discussion to the decisions that will be made under the umbrella of this EIS. How does this generic discussion of tanks and old burial grounds relate to closure of currently operating burial grounds and decommissioning and closure or removal of treatment and storage facilities?
S2	2.2.7, pp. 2.40-41	There is no indication of which of the "specific measures that long-term stewardship can include" will be assumed to be applied when decisions are made under this EIS, or which are included in the cost estimated in Table 3.21.
S3	2.2.7, pp. 2.40-41	There is no recognition that the "can include" list is incomplete when compared to DOE's own documents on long-term stewardship. Those documents recognize the need for information maintenance and management, public involvement and accountability, and contingency planning. See, for instance, the National Research Council's report <b>Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites</b> , Ch. 5.
S4	2.2.7, pp. 2.40-41	While actual requirements "are dependent on rules and regulations under which the specific cleanup and post-cleanup activities are performed," both USEPA and Ecology, using both CERCLA and closure under Washington's Hazardous Waste Management Act, have been clear that reliability of institutional controls is a requirement. There is no discussion of the reliability of institutional controls (e.g., there is no recognition that the Federal Government has refused to register contaminated sites under Colorado's environmental easement law.)



S5	Summary, pp. S.1-2	The introductory material ignores mixed TRU waste. It also asserts that "Hanford has long received TRU waste from off-site sources," which is contrary to information provided to the state and the public in the past.
S6	Summary, Sec. S.1, pp. S.3	The fifth bullet (line 16) implies that the EIS is about closure and post-closure stewardship of on-site facilities. But the discussion of post-closure stewardship in the EIS (Sec. 2.2.7) is inadequate and contains no real information about specific actions and facilities at Hanford.
S7	S.2, p. SA.6	The statement in the first bullet (line 21) that sites with existing capability will continue to dispose of their own MLLW is misleading. Only Hanford and NTS have such capability and they were selected in the 2000 ROD as the sites for other DOE sites to use for MLLW disposal.
S8	S.9	Figure S.4 does not include environmental restoration waste and contamination left in place outside the burial grounds; therefore it understates the residual burden to be left at Hanford.
S9	S.4, p. S.13	The last sentence in the first paragraph (lines 14-15) is not helpful or informative to the public. It should say what alternatives for waste types are and are not included.
S10	S14	Figure S.6 also fails to convey the total residual burden at Hanford by excluding pre-1964 DOE wastes and ERDF.
S11	Sec. S.5, pp. S.19-21	The statement at the bottom of p. S.19, continuing at the top of S.21, should be amended to indicate that storage of RH TRU at Hanford will continue after WIPP is certified to receive such wastes if any characterization, treatment or packaging is required at Hanford, since Hanford's capability to undertake these tasks is not scheduled until well after DOE's scheduled 2005 WIPP RH TRU waste acceptance date.



- S12                      Appendix A, pp. A.1 and A.28                      It would helpful to the reader to include a clear statement as to whether, and if so, where, Section A.2 has changed from the first draft HSW-EIS. Also, the labeling of "Part 1" and "Part 2", with the latter then opening as section A.1, though the tables in Part 1 are labeled A.1 and A.2, is quite confusing to the reader.
- S13                      Appendix C, pp. C.1-4                      The summary (p. S.2) links the proposed action to cleanup and closure of DOE sites across the country. Sec. A.1.2 deals with equity issues, focusing on integrated cleanup. When one comes to Appendix C, however, it is not clear whether the forecasts of off-site waste include only waste from cleanup and closure of sites, or wastes from continuing operation. **Paths to Closure** (June 1998), one of the sources cited in Appendix C, "was developed under the assumption that the EM program will not accept any newly-generated, non-EM waste after FY 2000." (P. S.11 of **Paths to Closure**.) It is not clear from the text or tables in Appendix C whether other sources used (which have differing assumptions, time frames, etc.) are also limited to wastes generated before FY 2001 or to be generated only by EM in its cleanup activities. If the forecasts include wastes generated by other DOE programs in the future, then the scope of the activities in the EIS go beyond supporting an integrated national cleanup of legacy wastes and closure of sites.
- S14                      Sec. 1.3.2.3, p. 1.12                      Environmental restoration waste and contamination left in place outside the burial grounds is not included. Therefore the residual burden to be left at Hanford is understated.
- S15                      Sec. 1.4.2, p.1.13                      The discussion of the Cost Report should indicate *who* should consider life-cycle costs (lines 38-40) and indicate how this EIS relates to such "consideration".
- S16                      Secs. 1.4.3 and 1.4.4, p. 1.14                      Reading these sections, one would never know that or how these activities relate to the EIS. Some of the alternatives considered arose out of the C3T process, and decisions made based on the EIS are essential to the PMP.
- S17                      Sec. 1.6.6, pp. 1.31-32                      These three paragraphs are generic and bureaucratic. They do not convey clearly what people can expect next with regard to *this* EIS and what decisions can be expected when.



S18	Sec. 1.7.1.3, p. 1.33	We appreciate that DOE has clarified that some TRU wastes contain hazardous constituents and are subject to RCRA and state regulation, though we regret that the category of TRU-Mixed (TRUM) used in earlier NEPA documents cited in Section 1.5 has been abandoned.
S19	Sec. 1.7.2, p. 1.34	We appreciate that DOE has separated out and analyzed a Hanford-only volume, as we and many others requested in the original 1997-8 scoping period.
S20	Sec. 2.1.3, p. 2.9	The statement should be amended to indicate that storage of RH TRU at Hanford will continue after WIPP is certified to receive such wastes if any characterization, treatment or packaging is required at Hanford, since Hanford's capability to undertake these tasks is not scheduled until well after DOE's scheduled 2005 WIPP RH TRU acceptance date.
S21	Sec. 2.2.2, pp. 2.16 ff	The status of the Proposed Modified Treatment Facility: Mobile TRU Processing Facility (Box, p. 2.19) vis-à-vis the EIS is confusing. Other boxed items in the section are included in the analysis, but apparently the APLs are not?
S22		Original comment #46 asked for more information regarding the evaluation of commercial treatment facilities and the concept of shipping wastes directly from the point of origin to treatment – not via Hanford. DOE's provides the following important response: "All MLLW from off-site generators is assumed to be treated prior to being received at Hanford for disposal." This sounds like Hanford is not being used as a treatment or storage facility, only a disposal facility. Please clarify that MLLW must be stored in compliance with the Dangerous Waste regulations, which includes proper characterization and packaging.
S23	CRD, p. 3.87	Original comment #51 stresses the need to look at T Plant as a TSD and to identify what mods to T Plant are anticipated. DOE's response refers the reader to Section 2.2.2; however, that sections doesn't provide much in detail.



S24	CRD, 3.105	Original comment #131 cited the inadequate monitoring systems detecting releases to the soil and groundwater from LLBG trenches. DOE's response was, in part, "Groundwater monitoring is conducted according to the RCRA permit and TPA requirements for the disposal areas, and will be expanded as necessary according to agreements between DOE and regulatory agencies to support future waste management operations." DOE's response confirms the need for thorough groundwater and vadose zone monitoring considerations in development of the final LLBG permit conditions.
S25	CRD, p. 3.18	Original comment #52 questions DOE's assumption that WIPP will take PCBs and suggests that EIS considerations should be made based on existing conditions. DOE's response that EPA has indicated acceptance, but the final decision has not been made. DOE sticks to their assumptions.
S26	Sec. 1.3.2.3, p.1.10; Sec. 2.1.3, pp. 2.8-2.11; Appendix C. Sec. C.4, p. 11	Bullet 3 states that Hanford will manage transuranic (TRU) waste from "some other DOE sites that do not have capacity" to manage them. Sec. 2.1.3 does not classify the form or quantify the volume of offsite TRU waste that will be managed at Hanford. Sec. 3.3.3 states only that an added 1500 cu. m. of TRU waste would be received for temporary storage and shipment to WIPP; separate volumes of CH and RH TRU should be specified. Appendix C, section C.4 Transuranic Waste asserts that the volume of TRU waste from offsite could be added to the Hanford Lower Bound without significant environmental impact. A reader cannot readily ascertain how the USDOE determined the negligible impact; therefore, its validity is questionable.
S27	Vol. I, Sec. 3.1.2.3, p. 3.9, Sec. 5.3.4.1, p. 5.39	Disposal determinations are inconsistent for Alternative A in the sections cited. P. 3.9, Sec. 3.1.2.3, states "The large WTP melters would be taken to a dedicated lined trench near PUREX for disposal." In contrast, Sec. 5.3.4.1, p. 5.39, states "Melters disposed of after 2007 in 21-m (69-ft) deep trenches in LLBG 218-E-12B." Clarify which trench is included in Alternative A for the melters.



S28

Ecology noted that the *Integrated Mission Analysis Plan for the Office of River Protection* lists processing 750,000 gallons of transuranic mixed (TRU-M) waste from single shell tanks using supplemental technology (Table ES-1, Integrated Mission Acceleration Plan Strategies Produce Results, p. ES-3) Ecology supports the TRU-M tank waste initiatives. Section 4.4.1.1 of the IMAP states that 12 tanks will be handled as TRU-M (9 SSTs as contact handled waste and 3 DSTs as remote handled waste). Section 4.4.1.2.1 explains that the TRU-M waste will be dewatered and packaged into WIPP compliant containers (contact handled), with added steps for remote-handled TRU solid/liquid separation-processing or solidification. Ecology interprets these steps as treatment to meet the WIPP disposal requirements. In the Revised Solid Waste EIS, Appendix B Preferred Alternative Groups D & E (pp. B.85-B.88) has no detailed information reflecting the additional volume of TRU-M waste that may be generated by this ORP action.

The tank waste that is being characterized as TRU-M (rather than HLW) cannot be transported to WIPP until the NRC concurs with the redesignation, WIPP accepts the waste, and the State of New Mexico accepts the waste. Should that acceptance be delayed, the tank waste TRU-M must be treated, packaged, and stored at Hanford. That waste might constitute a waste form with no approved path forward to disposal. Ecology's review of the SWIFT report for 2002 did not reveal specific amounts forecast for the TRU-M tank waste. Ecology requests that the USDOE add specific quantities to the TRU-M volumes evaluated for storage and evaluate the impacts of long-term storage in the Final EIS.

S29

Ecology received a copy of the *West Valley Demonstration Project Waste Management Environmental Impact Statement* for comment. Ecology noted that both the preferred Alternative A and the other Alternative B assume that LLW and MLLW will be transported to Hanford or the Nevada Test Site for disposal. Searching through the information provided in the RHW EIS and SWIFT, reviewers could not determine if the volume of waste to be sent was included in the volume calculations for the Lower or Upper Bound volumes. Ecology requests that the USDOE add the volumes to those already in the RHW EIS and analyze the impacts of receipt of those wastes for disposal.



In the same EIS, Ecology noted that Alternative B proposes trans-shipments of TRU and HLW waste from West Valley to Hanford for storage prior to disposal at WIPP and the geologic repository respectively. Ecology could not determine if the RHSW EIS included those wastes or what impacts storage of the wastes might have on storage of Hanford wastes. Ecology requests that the USDOE add the volumes to those already in the RHSW EIS and analyze the impacts of storage of those wastes.



<u>RHW-EIS</u> <u>COMMENT</u> <u>NO.</u>	<u>RHSW-EIS</u> <u>REFERENCE</u>	<u>COMMENT</u>
Analyses (A) 1	Appendix I/I.29- I.35	Only risk from radiochemicals is addressed. There should be an explanation why USDOE believes non-radiochemical hazardous waste is addressed in the analysis of HSW EIS alternatives. 1998. GUIDELINES FOR ECOLOGICAL RISK ASSESSMENT. USEPA EPA/630/R095/002F. 01 Apr 1998. U.S. Environmental Protection Agency, Risk Assessment Forum, Washington, DC, 175 pp.
A2	Volume 3.5 Appendix L.2.8	Uncertainty is addressed in volume I (3.5) and volume II (L.2.8). Specifically, overall causes of error between modeled and observed data, uncertainty due to using different models, also natural variability and possible uncertainty due to lack of characterization are not addressed. This uncertainty needs to be addressed in some manner that explains the extent of its significance to this project. Uncertainty has been explained in the SAC. The September 2002 , PNNL-14027 "An Initial Assessment of Hanford Impact Performed with the System Assessment Capability" document addresses uncertainty by determining the model parameters that contribute the most variability. An approach similar to this would be helpful in grasping the significance of variability with all the modeling parameter and data or lack of data used.
A2 (Cont'd)		Ecology encourages the USDOE to incorporate the discussion of uncertainty in the Final SW EIS. Ecology supports National Council on Radiation Protection and Measurements publication no. 14, "A Guide for Uncertainty Analysis in Dose and Risk Assessments Related to Environmental Contamination," dated May 10, 1996. "Incorporating uncertainty analysis into a dose or risk assessment provides an essential ingredient for decision-making."
A3	Vol. I, Sec. 3.5.3	One assumption made in the uncertainty section (3.5.3) is that variability in contaminant behavior and exposure effects are greater than inventory, release and environmental transport. This needs further explanation, especially since this EIS has large variability in inventory, release and transport data.



- A4                      Vol. I, Sec.  
S.7, p. S.26            The statement that the failure of institutional controls is very, if not overly conservative, is not well-supported. The National Research Council's report **Long-Term Institutional Management of U.S. Department of Energy Legacy Waste Sites**, p. 52 says: "Often the real issue is not **whether** use restrictions will eventually fail, but when and what the **consequences** will be when they do."
- A5                      Vol. I, Sec.  
4.8.5, p. 4.91            There is no analysis of impacts of shipping lower- or upper-bound volumes of waste to Hanford, or shipping wastes from Hanford for treatment or disposal, as such shipments would relate to the deficiencies in the regional transportation system identified on p. 4.91, including segments of the road network operating below minimal levels of service. Nor is there any analysis of the ways in which such congestion might affect risks of routine exposure or accident.
- A6                      CRD, 3.80                Original comment #17 asked if TRUM was considered and analyzed in the scope of the EIS. DOE's response was that since TRU-M was going to WIPP without treatment, they did not make a distinction between TRU and TRU-M. Section 2.1.3 addresses this, and states they expect that WIPP will take RH waste by 2005. The issue of whether the LDR storage prohibition applies to continued storage of Hanford TRU-M is currently in litigation. The EIS should not assume treatment will not be required; moreover, no mention was made about restrictions for PCB or ignitable/reactive wastes.



A7 Vol. I, Sec. 4.6; The description of the affected environment and impacts to ecological resources Sec. 5.5;Sec. 5.5.6, p. 5.81 ignores the fragmentation of habitat that results in direct impacts to species diversity and does not address ecological relationships that may be affected by the alternatives. Habitat is judged to be unsuitable or unaffected based in large part on effects of the 24 Command Fire of 2000, with no attempt to integrate additional impacts from proposed actions in this EIS. Analyses of the impacts of proposed actions are not complete for certain species (e.g., loggerhead shrike) and environmental impacts (e.g., adverse noise-based impacts). The discussion of new to science species does not give sufficient information to determine what impacts the proposed alternatives might have. Ecology does not view the evaluation of ecological impacts to plants and animals to be sufficient because of these deficiencies. An eco-system analysis should be added to the Final EIS.

A7 (Cont'd)

The State Department of Fish and Wildlife will provide specific comments regarding these issues. Ecology will consider deficiencies to be addressed when the eco-system analysis is completed satisfactorily and comments from F&WL are addressed in the Final EIS.

A8 Vol. II, App. F Fish consumption: Since there is public concern regarding contamination of fish in the Columbia River, it would be worthwhile to explain why consumption of Columbia River fish is not included in the exposure pathway analysis, as listed in Table F.39.



A9 Vol I, Sec. 5.11 Drinking water dose, and comparison to standards: Tables of drinking water doses are presented in Section 5.11 and graphs of drinking water doses are presented in Appendix F. Section F.1.6 (page F.44) explains that the drinking water doses are reported as committed effective dose equivalent (CEDE). The tables in Section 5.11 and the graphs in Appendix F then compare the resulting drinking water doses to a 4 mrem/y (presumably also as CEDE) drinking water benchmark. It should be noted that the EPA drinking water standard is not 4 mrem/y CEDE. The standard consists of MCLs for H-3, Sr-90, and alpha emitting radionuclides (including uranium) and consists of a 4 mrem/y committed dose equivalent CDE (not committed effective dose equivalent CEDE) limit to the most sensitive organ for beta and gamma emitting radionuclides. Dose equivalent and effective dose equivalent differ by organ weighting factors and are not the same quantities. Therefore, it is not appropriate to compare the resulting CEDE drinking water doses to a 4 mrem/y CEDE benchmark, because it has no regulatory basis.

A9 (Cont'd) From a regulatory perspective, to make a more credible comparison to a drinking water benchmark, resulting drinking water doses for uranium should be compared to the drinking water MCL for uranium. For the remaining radionuclides analyzed (C-14, Tc-99, I-129), there are two possibilities. The first method is to calculate the CDE doses to the most sensitive organ (instead of CEDE) and compare those to the 4 mrem/y CDE EPA drinking water standard. The second method is to simply compare the groundwater concentrations to the individual EPA drinking water MCLs. This is already carried out in Section 5.3 of the HSW EIS. (Note: these MCLs are not necessarily equivalent to 4 mrem/y CDE to the most sensitive organ, as in many cases they are based on decades old science).

A10 Vol. I, Sec. 5.11 and Vol. II, App. F. Section 5.11 and Appendix F report an enormous quantity of results for several scenarios and several alternatives. It would benefit the reader to summarize the results and present the most significant findings.



- A11 Vol. I, Sec. 3.5, (Re: Comment # 170) Section 3.5 addresses uncertainty in a qualitative manner. Although the SAC addresses uncertainty quantitatively (Section L.2.8), this analysis is limited to the variation in modeled parameters and does not differentiate between uncertainty due to lack of knowledge vs. uncertainty due to natural variation.
- A12 (Re: Comment # 171) Although cumulative impacts are discussed (e.g., SAC model), limitations of the assessment are not described in a meaningful way.
- A13 CRD, p. 3.113 (Re: Comment # 182) Three exposure scenarios were evaluated (i.e., industrial, residential gardener, and residential gardener with sweat lodge inhalation), along with several accident and intruder scenarios. Although this is a relatively limited suite of scenarios, in comparison to HSRAM or CRCIA efforts, the three scenarios may effectively capture the range of risk. At the same time, however, it is surprising that a complete Native American scenario was omitted.
- A14 Appendix I (Re: Comment # 63) Although the pocket mouse was not evaluated, 57 terrestrial and aquatic receptors were assessed with the ECEM (Table I.8). However, EHGs are presented for only a handful of ecological receptors.
- A15 CRD, p. 3.89 (Re: Comment #68) Although USDOE concludes that the adverse impact to wildlife from noise (due to blasting operations) would be negligible, it is difficult to evaluate effects from this stressor, as effects may be subtle and indirect.
- A16 CRD, p. 3.90 (Re: Comment # 74) With the exception of uranium, ecological risks to nonradionuclide chemicals (e.g., carbon tetrachloride, PCBs, nitrate, metals) appear not to have been evaluated. At least for inorganics (e.g., heavy metals), rationale for this omission is lacking.
- A17 CRD, p. 3.90 (Re: Comment # 76) Although a rationale is provided for "best estimate" of Kd values, the associated uncertainty should be described.
- A18 CRD, p. 3.91 (Re: Comment # 80) It would be helpful to specify a systematic method for extrapolating a literature-based toxicity value to a usable LOEC or NOEC (i.e., quantifying an appropriate "uncertainty factor").



A19	CRD, p. 3.92	(Re: Comment # 82) Although the comment is addressed for uranium isotopes in a qualitative manner, a quantitative assessment is lacking for release of contaminants in cementitious waste.
A20	CRD, p. 3.92	(Re: Comment # 84) Although the inventory for Hg may be small, a Kd specific to the various forms of Hg (e.g., divalent, methylated, etc.) should be used, if available.
A21	CRD, pp. 3.92-94	(Re: Comment # 85) It is surprising that a complete Native American scenario was omitted, considering its sensitivity (both in terms of risk and environmental justice issues). Although the comment response primarily addresses fish consumption, there are other exposure factors in the scenario that may lead to increased risks (e.g., Harris and Harper, 1997).
A22	CRD, pp. 3.94	(Re: Comment # 86) Three exposure scenarios were evaluated (i.e., industrial, residential gardener, and residential gardener with sweat lodge inhalation), along with several accident and intruder scenarios. This is a rather limited suite of scenarios in comparison to HSRAM or CRCIA efforts. For example, exposures to Native Americans were omitted, and children (as a subpopulation with unique exposure factors) were not explicitly modeled.
A23	CRD, p. 3.94	(Re: Comment # 88) Although the revised document is improved, it remains difficult (in some cases) to link health assessment methods (e.g., source term characterization, COPC identification) with risk results. For example, which nonradionuclide contaminants contribute to cancer risk and noncancer HQ results in Tables 5.30, 5.50, and 5.68?
A24	CRD, p. 3.95	(Re: Comment # 91) Adequately addressed, although the response should presumably reference Table G.3 (not Table G.4).
A25	CRD, p. 3.95-96	(Re: Comment #101) adequately addressed, although the Table number in the response appears incorrect (correct Table number is 5.34). According to this table (i.e., Radiological Consequences of Accidents at CWC), a "design-basis" earthquake may result in 3 LCFs, whereas a "beyond-design basis" earthquake results in 30 LCFs in an offsite population.



A26

**Inventory and its implication:**

Since there are huge differences in the inventory of the waste, based on what is in the record vs. what can be estimated using the fuel-ratio method for fission product inventories not reported on original records or prior estimates ((please see Table L.1, e.g. for Tc-99 inventory: 9.1 Ci vs. 26.3 Ci)), the SAC-SW EIS should take both into consideration in one of their 25 realization analyses. The results of the comparison should be presented for comparison.

A27

With regard to institutional controls and long term stewardship, the RHSW EIS takes a very cursory approach. Instead of mentioning the longevity of European society and buildings, please reference the vast number of documents that describe average time elapsed prior to institutional control failures.



<u>RHSW-EIS COMMENT</u> <u>NO.</u>	<u>RHSW-EIS</u> <u>REFERENCE</u>	<u>COMMENT</u>
Transportation (T) 1	Appendix H, H.5.2, pp. H.32- 36	The "Route Characteristics for Transport in Washington and Oregon", identified in Table H-14 and used in the analysis of risk of transportation through Oregon and Washington is, as we understand it, based on 1990 census data. The analysis must be updated to include 2000 census data. Suburban and urban characteristics along the analyzed routes in the Portland and Tri-Cities areas have changed significantly since 1990.
T2	Sec. H.7 pp. H- 41-2	The discussion of risks of terrorist attack or diversion is inadequate. First, it implies NRC physical protection regulations apply to the shipments in question, which may not be the case for DOE shipments. Second, it assumes that maximizing fatalities is the only metric of interest to terrorists. Therefore, it ignores psychological and economic effects of terrorist acts. The analysis thus ignores the threat of diversion for a "dirty bomb" scenario. Third, while "most of the shipments . . . covered in this EIS are within the Hanford site boundaries, most of the shipment <u>miles</u> are not. Finally, because the analysis ignores the "dirty bomb" scenario, and because the shipments covered in the EIS are not (for the most part) Highway Route Controlled Quantities (HRCQ), requiring special physical protection, the large number of miles traversing "rural" territory may well <u>increase</u> opportunities for diversion. This analysis needs to be expanded and updated.



- T3                      Sec. H.9 Effects    The generic discussion may be interesting, but it provides of Transporting    little insight into decisions to be made under the EIS. The Solid Wastes by    last paragraph says it is premature to discuss. However, Rail, pp. H43-44    several DOE documents, including the Performance Management Plan for Carlsbad include specific commitments to rail transport of wastes from Hanford. The Carlsbad office is currently negotiating rail protocols with the Western Governors' Association. Clearly some use of rail is more imminent than the EIS acknowledges. In any case, Ecology's original August 2002 comment that impacts of inter modal transfers should be analyzed is not adequately addressed.
- T4                      Sec. 2.2.4, p.        This section appears to anticipate rail transport more seriously than Appendix H (see comment # 4 above), but 2.36                      still does not include any analysis of impacts of intermodal transfers.
- T5                      Sec. 2.2.4.1, p.      This brief overview section does not address the relative 2.36                      numbers of shipments associated with lower- or upper-bound cases in the EIS. Therefore, it provides neither a bridge to the risk analysis in Sec. 5.8 nor a basis for estimating impacts to the local transportation network discussed in Sec. 4.8.5.



T6

Sec. 2.2.4.2, p. 2.36-39 This generic discussion of transportation regulation and emergency response is helpful background. But this section contains no information about what activities will specifically be undertaken as any alternatives in the EIS are implemented, or which might be affected by differences in volumes or differences in the choice of alternatives (e.g. on-site vs. off-site treatment of waste.) Nor does it contain the information that many of these regulations do not apply to shipments on the Hanford Site – c.f. Sec. 6.11, p. 6.14). Nor does it contain any information about potential terrorism, although this issue was raised in comments on the first draft HSW-EIS.

T7

Sec. 4.8.5, p. 4.91 The statement on line 9 "Route 11A from SR 240 near its intersection with SR 240" is confusing, and may contain an error.